

---- steric interactions between particles

----- electrostatic forces between particles

FIG. 1

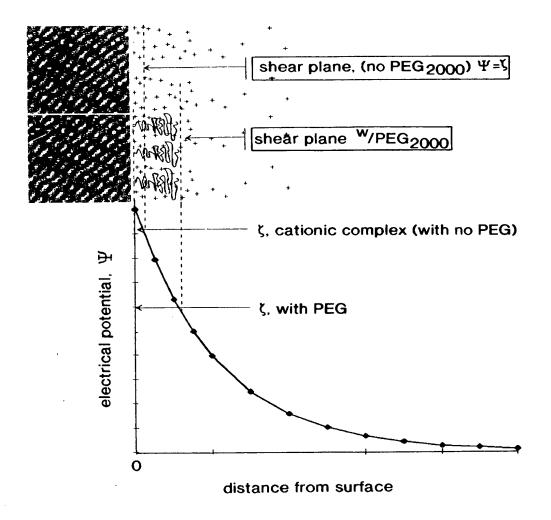
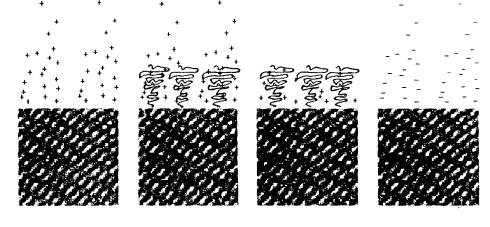


FIG. 2



Cationic complex (green) with electro-static field (blue), $\zeta = 35 \text{ mV}$

Cationic complex with added PEG₂₀₀₀, the shear plane is relocated away from the surface, ζ = 20 mV

Complex with PEG at surface and surface charge reduced by chemical modification, $\zeta = 0$

Complex (with no PEG) chemically modified to convert surface amines to carboxylic acids (cations to anions) $\zeta = -35$



lipid/DNA complex



electrostatic potential



FIG. 3

RPR209120

NHS-acetate



- 1) Room temperature, pH 7.5 for one hour 2) Dialyse against final buffer

NHS (leaving group)

Modification of zeta potential in RPR209120/DNA/PEG₂₀₀₀ complex using NHS acetate

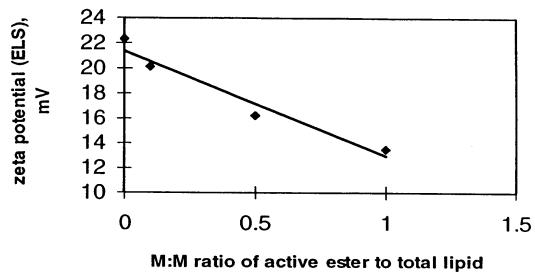


FIG. 5

Reaction of NHSacetate with lipid/DNA complexes

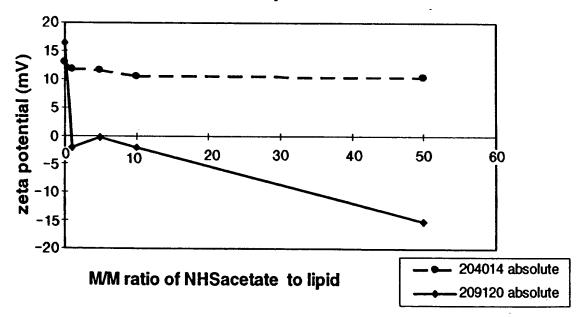
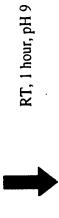


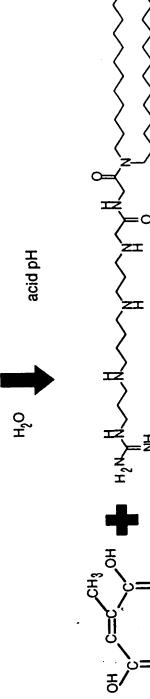
FIG. 6

.5

Citriconic acid, anhydride

RPR204014





209120/DNA/10% PEG Complex (indium labeled) NHSacetate Modified

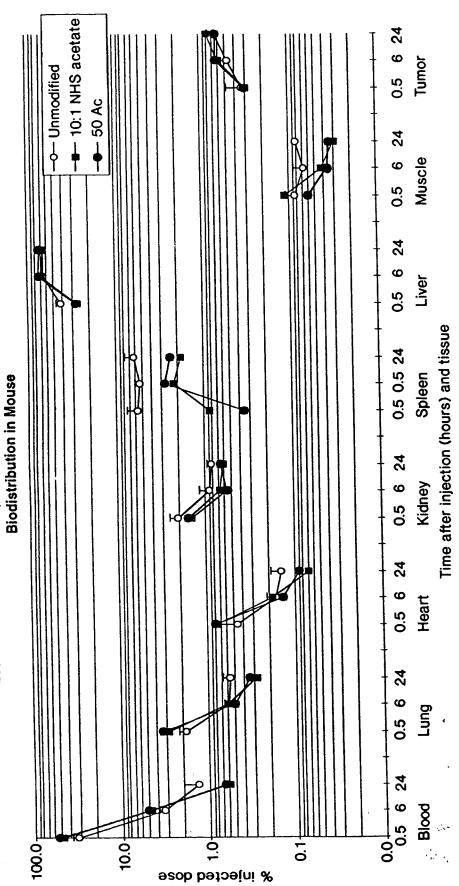
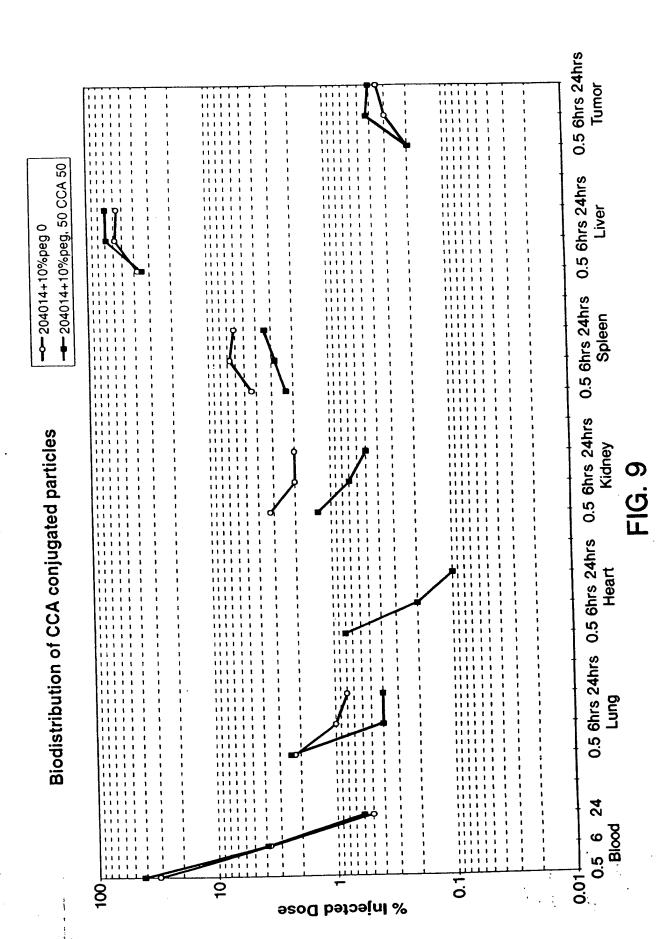


FIG. 8



RPR209120/DNA/PEG circulation in blood as a function of the degree of modification by NHSacetate

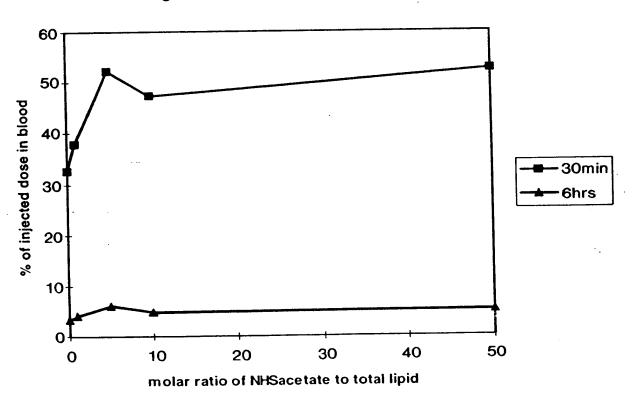


FIG. 10

NHSacetate modified RPR209120/DNA/PEG complex has lower impact on spleen

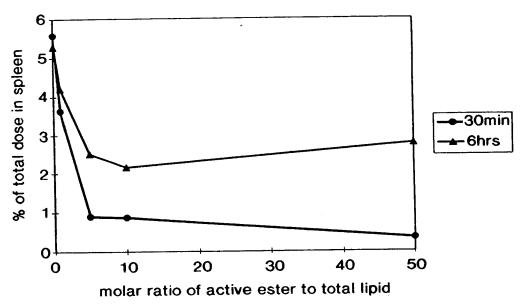


FIG. 11

Enhanced uptake in tumor of NHSacetate modified RPR209120/DNA/PEG complex.

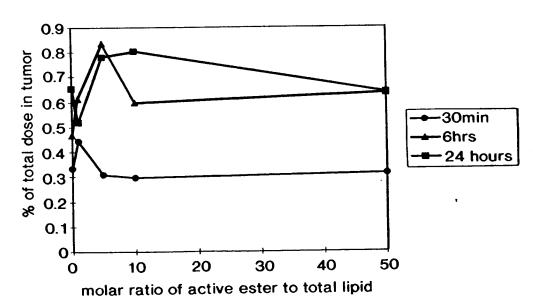


FIG. 12

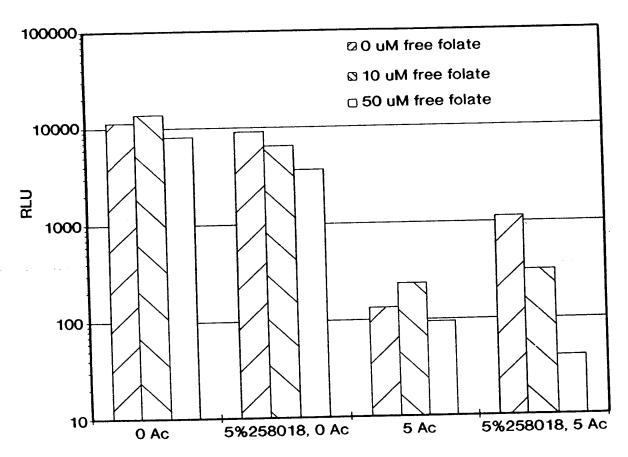


FIG. 13

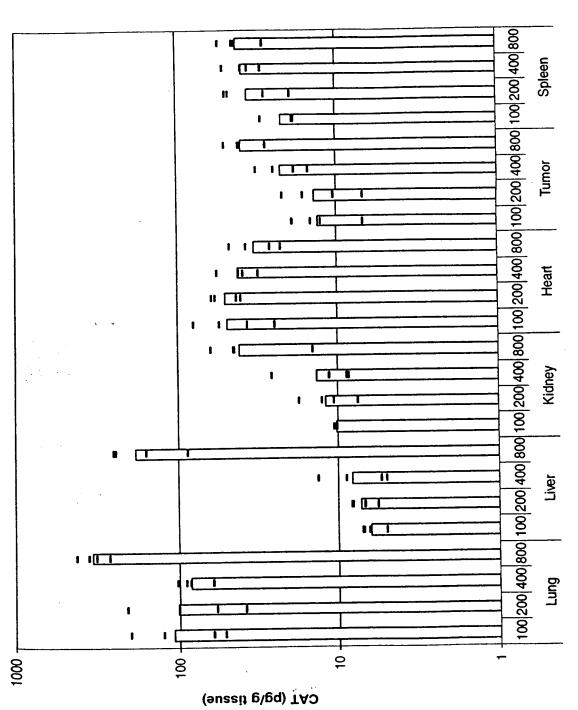


FIG. 14